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The issue of evaporation loss of oil products and possible solutions

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Abstract

© Research India Publications. The paper considers the issue of evaporation loss of oil products during storage, acceptance and delivery at bulk plants, fuel filling stations and oil refineries. The topicality of this issue is determined by the fact that it features both economic and environmental aspect. For example, fuel filling stations of Russia lose as the result of emission of light fractions of oil products up to 6 billion rubles per a year. Oil vapors worsen the ecological situation in large metropolises as most of fuel filling stations are located within the cities. In the real conditions hydrocarbon concentration is determined by the temperature of petroleum filled, degree and rate of reservoir filling as well as by concentration of these hydrocarbons in petroleum. The paper analyzes in details the causes and structure of hydrocarbon losses within oil products supply facilities. Comparative characteristic of the existing methods of tank vapor recovery and assessment of their efficiency are provided. Two new devices for vapor recovery during storage were proposed. It is shown that these devices allow ensuring efficient tank vapor recovery as well as improving efficiency of environmental protection at modern fuel filling complexes and bulk plants. At that gasoline quality is preserved as the result of return of light oil product fractions back to the reservoir.

Keywords

Breathing valve, Bubbling, Bulk plant, Fuel filling station, Hydrocarbon gases, Oil products, Reservoir, Throttler, Vapor recovery